

Rec'd PCT/PTO 13 APR 2005
10/531367

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number
WO 2004/040617 A2

(51) International Patent Classification⁷:

H01L

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/IB2003/006480

(22) International Filing Date: 20 October 2003 (20.10.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0224300.4 20 October 2002 (20.10.2002) GB

(71) Applicant (for all designated States except US): BOREALIS TECHNICAL LIMITED [—/—]; Montagu Pavilion, 8-10 Queensway, Gibraltar (GI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TAVKHELIDZE, Avto [GE/GE]; c/o Borealis Technical Limited, Montagu Pavilion, 8-10 Queensway, Gibraltar (GI). TSAKADZE, Leri [GE/GE]; c/o Borealis Technical Limited, Montagu Pavilion, 8-10 Queensway, Gibraltar (GI).

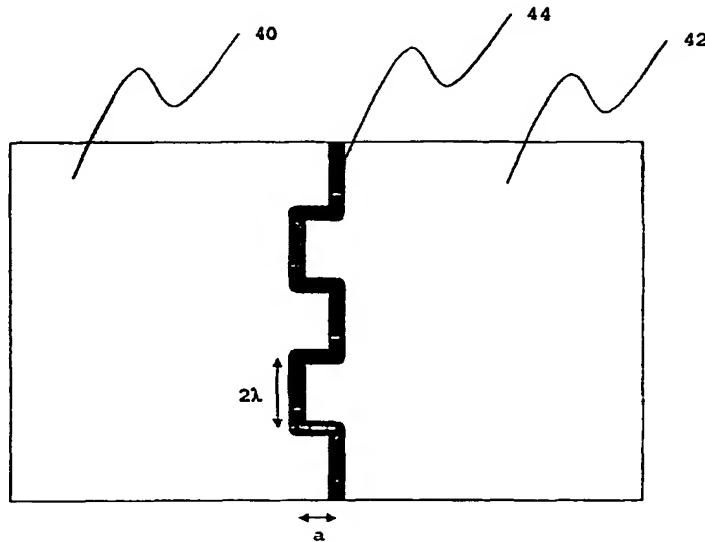
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: THERMOELECTRIC MATERIAL WITH INTEGRATED DE BROGLIE WAVE FILTER



WO 2004/040617 A2

(57) Abstract: In this invention we offer a method which blocks movement of low energy electrons through the thermoelectric material. We achieve this using filter which is more transparent for high energy electrons than for low energy ones. Tunnel barrier on the way of the electrons is used as filter. Filter works on the basis of the wave properties of the electrons. The geometry of the tunnel barrier is such that barrier becomes transparent for electrons having certain de Broglie wavelength. If the geometry of the barrier is such that its transparency wavelength matches the wavelength of high energy electrons it will be transparent for high energy electrons and will be blocking low energy ones by means of tunnel barrier.

BEST AVAILABLE COPY